

ABSTRACT

A direct injection internal combustion engine, especially an Otto engine, is provided with layered lean operation and internal exhaust-gas recirculation. An exhaust-gas aftertreatment for reducing Nox using an Nox storage catalyst is also provided. This combination is to achieve the highest possible exhaust-gas recirculation rates with the lowest HC and Nox emission values. A tumble flow is provided for the incoming fresh gases, which may contain recirculated exhaust gas from external exhaust-gas recirculation. The swirl axis of the incoming fresh gases therefore extends substantially crosswise to the piston movement. This results in an emissions-reducing, optimal mixture inside the cylinder during the layered lean operation.